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 (optical<in>metadata))<and>(contaminant<in>metadata)
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 <and>(model<in>metadata)
- #9 (photolithography outgass<IN>metadata)
- #10 ((optical<in>metadata)<and>(contaminant<in>metadata))
 <and>(model<in>metadata)
- #11 ((optical<in>metadata)<and>(contaminant<in>metadata))
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Analysis of actual fault mechanisms in CMOS logic gates



Glenn R. Case

June 1976 Proceedings of the 13th conference on Design automation DAC '76

Publisher: ACM Press

Full text available: pdf(493.98 KB)

Additional Information: full citation, abstract, references, citings, index

An analysis of failure modes in CMOS logic gates is presented. An example 3-input NAND gate is analyzed in detail and the ramifications of its failure modes are discussed.

Modeling the lot selection process in semiconductor photolithography processing

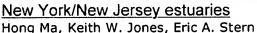


December 1992 Proceedings of the 24th conference on Winter simulation WSC '92

Publisher: ACM Press

Full text available: pdf(351.05 KB) Additional Information: full citation, references, index terms

3 Scientific visualization and data modeling of scattered sediment contaminant data in



October 1998 Proceedings of the conference on Visualization '98 VIS '98

Publisher: IEEE Computer Society Press

Full text available: pdf(769.11 KB)

Publisher Site

Additional Information: full citation, references, index terms

Keywords: scattered data modeling, spectral domain decompositon method

Dynamic data driven application simulation: sensor/simulation fusion: DDDAS approaches to wildland fire modeling and contaminant tracking

Craig C. Douglas, Robert A. Lodder, Richard E. Ewing, Yalchin Efendiev, Guan Qin, Janice Coen, Mauricio Kritz, Jonathan D. Beezley, Jan Mandel, Mohamed Iskandarani, Anthony Vodacek, Gundolf Haase

December 2006 Proceedings of the 37th conference on Winter simulation WSC '06



Publisher: Winter Simulation Conference

Full text available: 📆 pdf(203.65 KB) Additional Information: full citation, abstract, references

We report on two ongoing efforts to build Dynamic Data Driven Application Systems (DDDAS) for (1) short-range forecasting of weather and wildfire behavior from real time: weather data, images, and sensor streams, and (2) contaminant identification and tracking in water bodies. Both systems change their forecasts as new data is received. We use one long term running simulation that self corrects using out of order, imperfect sensor data. The DDDAS versions replace codes that were previously run us ...

5 Semiconductor manufacturing: semiconductor factory scheduling and control: Intelligent simulation-based lot scheduling of photolithography toolsets in a wafer fabrication facility

Amr Arisha, Paul Young

December 2004 Proceedings of the 36th conference on Winter simulation WSC '04

Publisher: Winter Simulation Conference

Full text available: pdf(436.55 KB) Additional Information: full citation, abstract, references

Scheduling of a semiconductor manufacturing facility is one of the most complex tasks encountered. Confronted with a high technology product market, semiconductor manufacturing is increasingly more dynamic and competitive in the introduction of new products in shorter time intervals. Photolithography, being one of the processes repeated often, is a fabrication bottleneck. Lot scheduling within photolithography is a challenging activity where substantial improvements in factory performance can be ...

6 DYNAMIC DATA-DRIVEN INVERSION FOR TERASCALE SIMULATIONS: REAL-TIME IDENTIFICATION OF AIRBORNE CONTAMINANTS

VOLKAN AKCELIK, GEORGE BIROS, ANDREI DRAGANESCU, JUDITH HILL, OMAR GHATTAS, BART VAN BLOEMEN WAANDERS

November 2005 Proceedings of the 2005 ACM/IEEE conference on Supercomputing SC '05

Publisher: IEEE Computer Society

Full text available: pdf(666.70 KB) Additional Information: full citation, abstract, index terms

In contrast to traditional terascale simulations that have known, fixed data inputs, dynamic data-driven (DDD) applications are characterized by unknown data and informed by dynamic observations. DDD simulations give rise to inverse problems of determining unknown data from sparse observations. The main difficulty is that the optimality system is a boundary value problem in 4D space-time, even though the forward simulation is an initial value problem. We construct special-purpose parallel multig ...

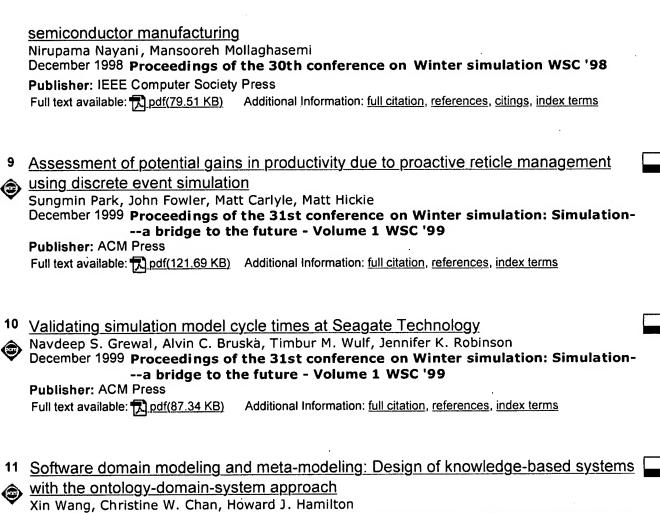
7 Semiconductor manufacturing: Simulation-based solution of load-balancing problems in the photolithography area of a semiconductor wafer fabrication facility Lars Mönch, Matthias Prause, Volker Schmalfuss

December 2001 Proceedings of the 33nd conference on Winter simulation WSC '01 Publisher: IEEE Computer Society

Full text available: 🔂 pdf(230.41 KB) Additional Information: full citation, abstract, references, index terms

In this paper we present the results of a simulation study for the solution of loadbalancing problems in a semiconductor wafer fabrication facility. In the bottleneck area of photolithography the steppers form several different subgroups. These subgroups differ, for example, in the size of the masks that have to be used for processing lots on the steppers of a single group. During lot release it is necessary to distribute the lots over the different stepper groups in such a way that global targ ...

Validation and verification of the simulation model of a photolithography process in



July 2002 Proceedings of the 14th international conference on Software engineering and knowledge engineering SEKE '02

Publisher: ACM Press

Full text available: 1 pdf(187.77 KB) Additional Information: full citation, abstract, references

An ontology is a comprehensive knowledge model that enables a developer to practice a "higher" level of reuse, namely knowledge reuse. To achieve knowledge reuse instead of software reuse, we propose forging a closer mapping between the knowledge and software models in the development process. In this paper, we first present UML as an ontology modeling language and then describe the Ontology-Domain-System approach to deriving a system model from a UML-based ontology model.

12 Yield modeling and BEOL fundamentals

José Pineda de Gyvez

March 2001 Proceedings of the 2001 international workshop on System-level interconnect prediction SLIP '01

Publisher: ACM Press

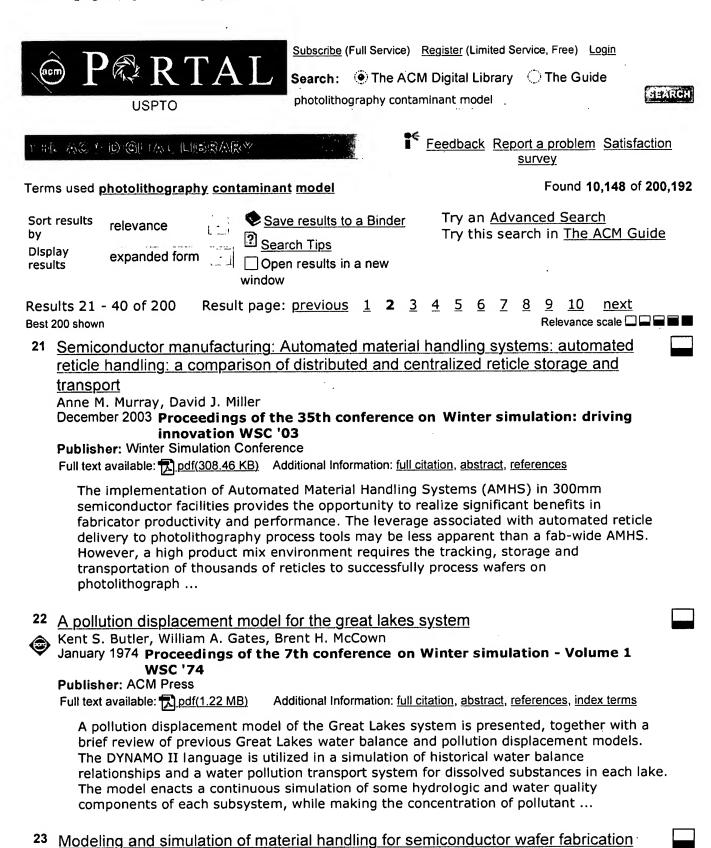
Additional Information: full citation, abstract, references, citings, index Full text available: pdf(850.38 KB) terms

The advent of deep submicron technologies with larger die sizes lends itself to an increase in fabrication cost. An appropriate yield forecast renders significant benefits in both timeto-market and manufacturing cost prediction. Yield forecasting is essential for the development of new products as it effectively shows if a design is feasible of meeting its cost objectives or not. In mature manufacturing processes, spot defects are the main detractors in the successful outcome of an IC. The ...

13	Predicting environmental restoration activities through static simulation Terry L. Ross, Dale A. King, Mark L. Wilkins, Mary F. Forward December 1994 Proceedings of the 26th conference on Winter simulation WSC '94 Publisher: Society for Computer Simulation International Full text available: pdf(675.74 KB) Additional Information: full citation, references, index terms	
14	Biological/environmental simulations: biological/environmental simulations: A probabilistic total system approach to the simulation of complex environmental systems Rick Kossik, Ian Miller December 2004 Proceedings of the 36th conference on Winter simulation WSC '04 Publisher: Winter Simulation Conference Full text available: pdf(445.83 KB) Additional Information: full citation, abstract	,
	GoldSim is a powerful and flexible Windows-based computer program for carrying out probabilistic simulations of complex systems to support management and decision-making in engineering, science and business. The program is highly graphical, highly extensible, able to directly represent uncertainty, and allows you to create compelling presentations of your model. Although GoldSim can be used to solve a wide variety of complex problems, it is particularly well-suited (and was originally developed)	
15	Facial modeling and animation	
•	Jörg Haber, Demetri Terzopoulos August 2004 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04	
	Publisher: ACM Press Full text available: ☐ pdf(18.15 MB) Additional Information: full citation, abstract	
	In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s	
16	Semiconductor manufacturing: Process equipment modeling: application of cluster	
	tool modeling to a 300 mm fab simulation Sameer T. Shikalgar, David Fronckowiak, Edward A. MacNair December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03	
•	Publisher: Winter Simulation Conference Full text available: pdf(251.58 KB) Additional Information: full citation, abstract, references	
	300 mm semiconductor wafer fabrication facilities, like conventional semiconductor fabs, contain many different types of tools. In this paper we discuss a realistic way of representing cluster tools in a simulation model of the entire line. A more realistic representation of cluster tools results in greater accuracy in the output of the simulation model.	
17	An approach to modeling labor and machine down time in semiconductor fabrication Susan S. Baum, Cheryl M. O'Donnell December 1991 Proceedings of the 23rd conference on Winter simulation WSC '91	

	Publisher: IEEE Computer Society Full text available: pdf(560.31 KB) Additional Information: full citation, references, citings, index terms
18	A rapid modeling technique for measurable improvements in factory performance Andreas Peikert, Josef Thoma, Steven Brown December 1998 Proceedings of the 30th conference on Winter simulation WSC '98 Publisher: IEEE Computer Society Press Full text available: pdf(58.62 KB) Additional Information: full citation, references, citings, index terms
19	Semiconductor manufacturing: Wafer fabrication: 300mm wafer fabrication line simulation model Sameer T. Shikalgar, David Fronckowiak, Edward A. MacNair December 2002 Proceedings of the 34th conference on Winter simulation: exploring new frontiers WSC '02 Publisher: Winter Simulation Conference Full text available: pdf(147.92 KB) Additional Information: full citation, abstract, references, citings The importance of semiconductor wafer fabrication has been increasing steadily over the past decade. Wafer fabrication is the most technologically complex and capital intensive phase in semiconductor manufacturing. It involves the processing of wafers of silicon in order to build up layers and patterns of metal and wafer material. Many operations have to be performed in a clean room environment to prevent particulate contamination of wafers. Also, since the machines on which the wafers are pr
20	A model of a 300mm wafer fabrication line Philip L. Campbell, Darius Rohan, Edward A. MacNair December 1999 Proceedings of the 31st conference on Winter simulation: Simulation— a bridge to the future - Volume 1 WSC '99 Publisher: ACM Press Full text available: pdf(34.82 KB) Additional Information: full citation, references, citings, index terms
Res	ults 1 - 20 of 200 Result page: 1 <u>2</u> <u>3</u> <u>4</u> <u>5</u> <u>6</u> <u>7</u> <u>8</u> <u>9</u> <u>10</u> <u>next</u>
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December 1994 Proceedings of the 26th conference on Winter simulation WSC '94

Full text available: pdf(691.41 KB) Additional Information: full citation, references, citings, index terms

Neal G. Pierce, Richard Stafford

Publisher: Society for Computer Simulation International

24	<u>Dispersion Simulation and Visualization For Urban Security</u> Feng Qiu, Ye Zhao, Zhe Fan, Xiaoming Wei, Haik Lorenz, Jianning Wang, Suzanne Yoakum-Stover, Arie Kaufman, Klaus Mueller October 2004 Proceedings of the conference on Visualization '04 VIS '04	
	Publisher: IEEE Computer Society	
	Full text available: pdf(545.62 KB) Additional Information: full citation, abstract, citings	
	We present a system for simulating and visualizing the propagation of dispersive contaminants with an application to urban security. In particular, we simulate airborne contaminant propagation in open environments characterized by sky-scrapers and deep urban canyons. Our approach is based on the Multiple Relaxation Time Lattice Boltzmann Model (MRTLBM), which can efficiently handle complex boundary conditions such as buildings. In addition, we model thermal effects on the flow field using the hy	
	Keywords: Lattice Boltzmann Model, GPU, Visualization	
25	Validation of models: statistical techniques and data availability Jack P. C. Kleijnen	
~	December 1999 Proceedings of the 31st conference on Winter simulation: Simulationa bridge to the future - Volume 1 WSC '99 Publisher: ACM Press	
	Full text available: podf(86.11 KB) Additional Information: full citation, references, citings, index terms	
26	A flexible statistical model for CAD of submicrometer analog CMOS integrated circuits	
	Christopher Michael, Christopher Abel, C. S. Teng November 1993 Proceedings of the 1993 IEEE/ACM international conference on Computer-aided design ICCAD '93	
	Publisher: IEEE Computer Society Press Full text available: pdf(363.42 KB) Additional Information: full citation, references, citings	
27	Supporting semiconductor manufacturing simulation tools using a structured data model	
9	Susan S. Baum, Peter G. Glassey December 1992 Proceedings of the 24th conference on Winter simulation WSC '92	
	Publisher: ACM Press	
	Full text available: 🔁 pdf(613.47 KB) Additional Information: full citation, references, index terms	
28	Projection-based performance modeling for inter/intra-die variations	
	Xin Li, Jiayong Le, L. T. Pileggi, A. Strojwas May 2005 Proceedings of the 2005 IEEE/ACM International conference on Computer-aided design ICCAD '05	
	Publisher: IEEE Computer Society Full text available: pdf(312.53 KB) Additional Information: full citation, abstract, citings	
	Large-scale process fluctuations in nano-scale IC technologies suggest applying high- order (e.g., quadratic) response surface models to capture the circuit performance variations. Fitting such models requires significantly more simulation samples and solving	

much larger linear equations. In this paper, we propose a novel projection-based extraction approach, PROBE, to efficiently create quadratic response surface models and capture both inter-die and intra-die variations with affordable computat ...

29 Construction engineering and project management: Construction engineering and project management I: building a virtual shop model for steel fabrication Lingguang Song, Simaan M. AbouRizk

December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03

Publisher: Winter Simulation Conference

Full text available: pdf(487.44 KB) Additional Information: full citation, abstract, references

Steel fabrication is a complex process, which encompasses product uniqueness, a high product mix, and a number of activities involving a variety of equipment and labor disciplines. The steel fabrication industry needs advanced tools and techniques in order to estimate, plan, and control fabrication shops. This paper proposes a system for building virtual fabrication shop models capable of estimating, scheduling, and analyze production. The system defines conceptual models for product, process ...

30 <u>Semiconductor manufacturing: Factory capacity and throughput planning:</u> conceptualization, design and implementation of a static capacity model Orkun Ozturk, Melissa Boom Coburn, Steve Kitterman

December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03

Publisher: Winter Simulation Conference

Full text available: pdf(305.61 KB) Additional Information: full citation, abstract

This paper describes the methodology used for development of a static capacity model. It is a well-known fact that no matter how sophisticated the dynamic models are, there is always a need for the simple spreadsheet model. The spreadsheet model helps one carry out simple and fast analyses whenever they are needed. At the Seagate Technology's Recording Head Operations Wafer Manufacturing facility (Bloomington, MN) industrial engineers who worked on capacity planning devised their own versions ...

31 Trapol: A cold-start-sensitive simulation model of traffic-generated air pollution

emissions

Brian Laird Crissey

January 1974 Proceedings of the 7th conference on Winter simulation - Volume 1 WSC '74

Publisher: ACM Press

Full text available: 📆 pdf(737.12 KB) Additional Information: full citation, abstract, references, index terms

It should not be a surprise to anyone that the automobile is a primary source of the air pollutants Carbon Monoxide (CO), Hydrocarbons (HC), and Nitrogen Oxides (NOx). The severity of the issue is well documented, and the search for viable solutions to this complex problem is widely publicized, if still hesitant and speculative in nature. The use of computer models for the analysis of air pollution problems, although widespread and increasing, is constrained by a problem of scale ...

32 Distributed computation of wave propagation models using PVM

J. S. Sochacki, D. Mitchum, P. O'Leary, R. E. Ewing, R. C. Sharpley

December 1993 Proceedings of the 1993 ACM/IEEE conference on Supercomputing Supercomputing '93

Publisher: ACM Press

Full text available: pdf(1.18 MB) Additional Information: full citation, references, index terms

33	Biological/environmental simulations: biological/environmental simulations: Factors affecting the expectation of casualties in the virtual range toxicity model José Sepúlveda, Luis Rabelo, Jaebok Park, Fred Gruber, Oscar Martínez December 2004 Proceedings of the 36th conference on Winter simulation WSC '04 Publisher: Winter Simulation Conference Full text available: pdf(514.52 KB) Additional Information: full citation, abstract, references	
	The Virtual Range (VR) is an environment that integrates in a seamless fashion several models to improve complex systems visualization. A complex system is a non-linear system of systems whose interactions bring together interesting emergent properties that are very difficult to visualize and/or study by using the traditional approach of decomposition. The VR Toxicity Model as described here represents the different systems that interact in the determination of the expectation of casualties (E	
34 ②	e-Rulemaking 2: Locating related regulations using a comparative analysis approach Gloria T. Lau, Haoyi Wang, Kincho H. Law May 2006 Proceedings of the 2006 international conference on Digital government research dg.o '06 Publisher: ACM Press	
	Full text available: pdf(611.98 KB) Additional Information: full citation, abstract, references, index terms	
	The sheer volume and complexity of government regulations make any attempt to locate, understand and interpret the information a daunting task. Other factors, such as the scattered distribution of the regulations across many sources, different terminologies and cross referencing, further complicate the technical issues in developing a regulation information management system. This paper describes a comparative analysis approach and its potential application to assist locating relevant regulation	
	Keywords : regulatory comparison, relatedness analysis, structural analysis	
35	GPU Cluster for High Performance Computing	
	Zhe Fan, Feng Qiu, Arie Kaufman, Suzanne Yoakum-Stover November 2004 Proceedings of the 2004 ACM/IEEE conference on Supercomputing SC '04	
	Publisher: IEEE Computer Society Full text available: pdf(793.59 KB) Additional Information: full citation, abstract, citings	
	Inspired by the attractive Flops/dollar ratio and the incredible growth in the speed of modern graphics processing units (GPUs), we propose to use a cluster of GPUs for high performance scientific computing. As an example application, we have developed a parallel flow simulation using the lattice Boltzmann model (LBM) on a GPU cluster and have simulated the dispersion of airborne contaminants in the Times Square area of New York City. Using 30 GPU nodes, our simulation can compute a 480x400x80 L	
	Keywords : GPU cluster, data intensive computing, lattice Boltzmann model, urban airborne dispersion, computational fluid dynamics	•
36	Semiconductor manufacturing: Modeling methodology: simulation based cause and effect analysis of cycle time and WIP in semiconductor wafer fabrication Chao QI, Tuck Keat Tang, Appa Lyer Sivakumar December 2002 Proceedings of the 34th conference on Winter simulation: exploring new frontiers WSC '02	
	Publisher: Winter Simulation Conference	

Full text available: pdf(342.01 KB) Additional Information: full citation, abstract, references

Semiconductor wafer fabrication is perhaps one of the most complex manufacturing processes found today. In this paper, we construct a simulation model of part of a wafer fab using ProModel® software and analyze the effect of different input variables on selected parameters, such as cycle time, WIP level and equipment utilization rates. These input variables include arrival distribution, batch size, downtime pattern and lot release control. SEMATECH DATASET which has the original actual wa ...

37 Semiconductor manufacturing: Modeling methodology: using simulation to understand capacity constraints and improve efficiency on process tools Manuel Aybar, Kishore Potti, Todd LeBaron

December 2002 Proceedings of the 34th conference on Winter simulation: exploring new frontiers WSC '02

Publisher: Winter Simulation Conference

Full text available: pdf(200.15 KB) Additional Information: full citation, abstract, references, citings

Finding hidden capacity and maximizing cluster tool throughput is a common goal for today's semiconductor manufacturers. This presentation will discuss a flexible and accurate simulation program capable of modeling a wide range of semiconductor process tools. The simulation program provides visibility and understanding into the internal dependencies and interactions of each process tool. This information provides a solid base from which sound decisions can be made. Simulation results from two ...

38 Special issue: Al in engineering

D. Sriram, R. Joobbani

April 1985 ACM SIGART Bulletin, Issue 92

Publisher: ACM Press

Full text available: pdf(8.79 MB) Additional Information: full citation, abstract

The papers in this special issue were compiled from responses to the announcement in the July 1984 issue of the SIGART newsletter and notices posted over the ARPAnet. The interest being shown in this area is reflected in the sixty papers received from over six countries. About half the papers were received over the computer network.

39 Research sessions: spatial data: Spatially-decaying aggregation over a network:



model and algorithms Edith Cohen, Haim Kaplan

> June 2004 Proceedings of the 2004 ACM SIGMOD international conference on Management of data SIGMOD '04

Publisher: ACM Press

Full text available: pdf(358.49 KB) Additional Information: full citation, abstract, references, citings

Data items are often associated with a location in which they are present or collected, and their relevance or influence decays with their distance. Aggregate values over such data thus depend on the observing location, where the weight given to each item depends on its distance from that location. We term such aggregation spatially-decaying. Spatiallydecaying aggregation has numerous applications: Individual sensor nodes collect readings of an environmental parameter such as contaminatio ...

40 The challenges of visualizing and modeling environmental data

Yingcai Xiao, John P. Ziebarth, Chuck Woodbury, Eric Bayer, Bruce Rundell, Jeroen van der

October 1996 Proceedings of the 7th conference on Visualization '96 VIS '96

Publisher: IEEE Computer Society Press

Full text available: pdf(5.00 MB) Additional Information: full citation, references, citings, index terms Results 21 - 40 of 200

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Relevance scale ...

41 Web based collaborative visualization of distributed and parallel simulation



C. Bajaj, S. Cutchin

October 1999 Proceedings of the 1999 IEEE symposium on Parallel visualization and graphics PVGS '99

Publisher: ACM Press

Full text available: pdf(1.56 MB)

Additional Information: full citation, abstract, references, citings, index terms

This paper presents an interaction model to support collaborative scientific visualization. Relevant prior work is presented to contextualize the model and its import. An implementation of the model is presented within a collaborative system that supports flexible collaborative coupling of multi-user applications. An example application is presented to demonstrate the capabilities of the model. The implementation is Web based, fully supports multi-user interfaces, uses VRML and compresed VR ...

42 <u>Homeland security/emergency response: simulation for emergency management:</u> Responding to terrorist attacks and natural disasters: a case study using simulation Pavel Albores, Duncan Shaw

December 2005 Proceedings of the 37th conference on Winter simulation WSC '05

Publisher: Winter Simulation Conference

Full text available: The pdf(320.76 KB) Additional Information: full citation, abstract, references

The heightened threat of terrorism has caused governments worldwide to reconsider their plans for responding in the immediate aftermath to large-scale catastrophic incidents. This paper discusses the use of discrete event simulation modeling to understand how a Fire Service might position its resources before an attack takes place, to best respond to a combination of different attacks at different locations if they happen. Two models are built for this purpose. The first model deals with mass de ...

43 Level set and PDE methods for computer graphics



David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker August 2004 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04

Publisher: ACM Press

Full text available: 📆 pdf(17.07 MB) Additional Information: full citation, abstract, citings

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using

partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ... 44 Object identity and dimension alignment in parametric databases Tsz S. Cheng, Shashi K. Gadia, Sunil S. Nair December 1993 Proceedings of the second international conference on Information and knowledge management CIKM '93 **Publisher: ACM Press** Additional Information: full citation, references, citings, index terms Full text available: T pdf(1.08 MB) 45 Special section on sensor network technology and sensor data managment: An environmental sensor network to determine drinking water quality and security Anastassia Ailamaki, Christos Faloutos, Paul S. Fischbeck, Mitchell J. Small, Jeanne VanBriesen December 2003 ACM SIGMOD Record, Volume 32 Issue 4 **Publisher: ACM Press** Full text available: Tpdf(72.40 KB) Additional Information: full citation, abstract, references Finding patterns in large, real, spatio/temporal data continues to attract high interest (e.g., sales of products over space and time, patterns in mobile phone users; sensor networks collecting operational data from automobiles, or even from humans with wearable computers). In this paper, we describe an interdisciplinary research effort to couple knowledge discovery in large environmental databases with biological and chemical sensor networks, in order to revolutionize drinking water quality and ... 46 The simulation of integrated tool performance in semiconductor manufacturing John L. Mauer, Roland E. A. Schelasin December 1993 Proceedings of the 25th conference on Winter simulation WSC '93 Publisher: ACM Press Full text available: pdf(387.17 KB) Additional Information: full citation, references, citings 47 Aerospace and military applications: simulation in aerospace II: distributed simulations: Usability study of the virtual test bed and distributed simulation Jeffrey W. Dawson, Ping Chen, Yanshen Zhu December 2005 Proceedings of the 37th conference on Winter simulation WSC '05 Publisher: Winter Simulation Conference

Full text available: pdf(197.49 KB) Additional Information: full citation, abstract, references

Improving the usability of a Distributed Simulation System (DSS) test bed is the focus of this paper. An introduction to the field of usability is given, followed by a discussion of the characteristics of DSSs. Then the usability of DSSs is considered. The Virtual Test Bed (VTB), a sample DSS we have improved the usability of, is described. The methodology used to improve the VTB's usability is given. With the goal of improving usability for end users, proto-typing of a graphical user interface ...

48 Linking TCAD to EDA—benefits and issues

G. Chin, W. Dietrich, D. Boning, A. Wong, A. Neureuther, R. Dutton June 1991 Proceedings of the 28th conference on ACM/IEEE design automation DAC

Publisher: ACM Press

	Full text available: pdf(774.94 KB) Additional Information: <u>full citation, references, index terms</u> .	
49	Detailed simulation for semiconductor manufacturing Robert W. Atherton, Linda F. Atherton, Mark A. Pool December 1990 Proceedings of the 22nd conference on Winter simulation WSC' 90 Publisher: IEEE Press Full text available: Def(500.98 KB) Additional Information: full citation, references, index terms	
50	Manufacturing applications: Neutral information structure for manufacturing simulations: designing reusable simulation modules for electronics manufacturing systems Phani S. Mukkamala, Jeffrey S. Smith, Jorge F. Valenzuela December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03 Publisher: Winter Simulation Conference Full text available: pdf(449.49 KB) Additional Information: full citation, abstract, references Developing simulation models for related problems in the same domain is generally a repetitive process. Such simulation models are similar in many aspects and have only minor differences. Modeling efforts can be reduced to a great extent through the development of domain specific modules or templates that encapsulate the domain-specific logic and hide many of the modeling details. This paper describes the development of such a domain-specific template for electronics assembly. In particular,	
51	Hanford solid waste management system simulation Steven R. Shaver, Lorna L. Armacost, Heidi S. Konynenbelt, Robert R. Wehrman December 1994 Proceedings of the 26th conference on Winter simulation WSC '94 Publisher: Society for Computer Simulation International Full text available: pdf(529.05 KB) Additional Information: full citation, references, index terms	
52	Semiconductor manufacturing: Automated material handling systems: a simulation-based design framework for automated material handling systems in 300mm fabrication facilities Dima Nazzal, Douglas A. Bodner December 2003 Proceedings of the 35th conference on Winter simulation: driving innovation WSC '03 Publisher: Winter Simulation Conference Full text available: pdf(362.35 KB) Additional Information: full citation, abstract, references This paper describes a methodology to tackle the problem of designing Automated Material Handling Systems (AMHS) for 300mm wafer fabrication facilities. The proposed framework divides the design process into two levels: architectural and elaborative. Prior to the design, fab data are preprocessed using simulation of manufacturing operations. The output data and fab requirements data are then profiled to aid in design decision making at the architectural level. Once architectural design decisi	
53 ②	Sold to the state of the state	

applications SMA '97

Publisher: ACM Press

Additional Information: full citation, references, index terms Full text available: pdf(1.43 MB)

54 Layered manufacturing as a graphics display device: Layered manufacturing as a





graphics display device

Sara McMains, Mike Bailey, Richard Crawford

July 2005 ACM SIGGRAPH 2005 Courses SIGGRAPH '05

Publisher: ACM Press

Full text available: R pdf(7.33 MB) Additional Information: full citation

55 Semiconductor manufacturing: Alternative loading and dispatching policies for furnace operations in semiconductor manufacturing: a comparison by simulation Elif Akcali, Reha Uzsov, David G. Hiscock, Anne L. Moser, Timothy J. Teyner December 2000 Proceedings of the 32nd conference on Winter simulation WSC '00 Publisher: Society for Computer Simulation International

Full text available: 🔀 pdf(497.51 KB) Additional Information: full citation, abstract, references, citings

In semiconductor manufacturing, furnaces are used for diffusion and deposition operations. A furnace is a batch processing machine, which can simultaneously process a number of lots together as a batch. Whenever a furnace becomes available, scheduling the next batch involves decisions on both which operation to process next (dispatching policy) and how many lots to put into the batch (loading policy). A simulation model of a wafer fabrication facility is used to examine the effects of different ...

56 Reticle enhancement technology trends: resource and manufacturability implications





for the implementation of physical designs

Warren Grobman, Robert Boone, Cece Philbin, Bob Jarvis

April 2001 Proceedings of the 2001 international symposium on Physical design ISPD

Publisher: ACM Press

Full text available: pdf(510.15 KB)

Additional Information: full citation, abstract, references, citings, index

In this paper, we briefly describe the lithography developments known as RET (Resolution Enhancement Technologies), which include off-axis illumination in litho tools, Optical and Process Correction (OPC), and phase shifting masks (PSM). All of these techniques are adopted to allow ever smaller features to be reliably manufactured, and are being generally adopted in all manufacturing below 0.25 microns. However, their adoption also places certain restrictions on layouts. We explore these res ...

57 BioMEMS: Design tools for BioMEMS



Tom Korsmeyer, Jun Zeng, Ken Greiner

June 2004 Proceedings of the 41st annual conference on Design automation DAC '04

Publisher: ACM Press

Full text available: pdf(852.47 KB)

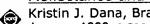
Additional Information: full citation, abstract, references, citings, index terms

Microsystems used for chemical analyses and biological assays are termed BioMEMS or labs-on-a-chip. These systems often require some of the traditional electromechanical capabilities of MEMS, and in addition require the manipulation of fluids in either continuous flow or droplet form. The distinction between continuous flow and droplets defines two broad categories of BioMEMS. Different applications call for one or the other of these

approaches, but in either case, software for design and simulation c ...

Keywords: BEM, BioMEMS, CAD, FEM, MEMS, PTAS, lab-on-a-chip, system-level modeling

58 Reflectance and texture of real-world surfaces



Kristin J. Dana, Bram van Ginneken, Shree K. Nayar, Jan J. Koenderink January 1999 ACM Transactions on Graphics (TOG), Volume 18 Issue 1

Publisher: ACM Press

Full text available: pdf(6.94 MB)

Additional Information: full citation, abstract, references, citings, index terms

In this work, we investigate the visual appearance of real-world surfaces and the dependence of appearance on the geometry of imaging conditions. We discuss a new texture representation called the BTF (bidirectional texture function) which captures the variation in texture with illumination and viewing direction. We present a BTF database with image textures from over 60 different samples, each observed with over 200 different combinations of viewing and illumination directions. We describe ...

59 An impact analysis method for safety-critical user interface design



Julia Galliers, Alistair Sutcliffe, Shailey Minocha

December 1999 ACM Transactions on Computer-Human Interaction (TOCHI), Volume 6 Issue 4

Publisher: ACM Press

Full text available: pdf(248.35 KB)

Additional Information: full citation, abstract, references, citings, index terms, review

We describe a method of assessing the implications for human error on user interface design of safety-critical systems. In previous work we have proposed a taxonomy of influencing factors that contribute to error. In this article, components of the taxonomy are combined into a mathematical and causal model for error, represented as a Bayesian Belief Net (BBN). The BBN quantifies error influences arising from user knowledge, ability, and the task environ-ment, combined with factors describin ...

Keywords: Bayesian belief networks, human error, safety-critical, scenario-based casual analysis

60 Effective implementation of cycle time reduction strategies for semiconductor backend manufacturing

Joerg Domaschke, Steven Brown, Jennifer Robinson, Franz Leibl

December 1998 Proceedings of the 30th conference on Winter simulation WSC '98

Publisher: IEEE Computer Society Press

Full text available: pdf(87.67 KB) Additional Information: full citation, references, citings, index terms

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Dynamic data driven application simulation: sensor/simulation fusion: DDDAS approaches to wildland fire modeling and contaminant tracking

Craig C. Douglas, Robert A. Lodder, Richard E. Ewing, Yalchin Efendiev, Guan Qin, Janice Coen, Mauricio Kritz, Jonathan D. Beezley, Jan Mandel, Mohamed Iskandarani, Anthony Vodacek, Gundolf Haase

December 2006 Proceedings of the 37th conference on Winter simulation WSC '06

Publisher: Winter Simulation Conference

Full text available: The pdf(203.65 KB) Additional Information: full citation, abstract, references

We report on two ongoing efforts to build Dynamic Data Driven Application Systems (DDDAS) for (1) short-range forecasting of weather and wildfire behavior from real time weather data, images, and sensor streams, and (2) contaminant identification and tracking in water bodies. Both systems change their forecasts as new data is received. We use one long term running simulation that self corrects using out of order, imperfect sensor data. The DDDAS versions replace codes that were previously run us ...

Facial modeling and animation

Jörg Haber, Demetri Terzopoulos

August 2004 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04

Publisher: ACM Press

Full text available: pdf(18.15 MB) Additional Information: full citation, abstract

In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s ...

3 Level set and PDE methods for computer graphics



David Breen, Ron Fedkiw, Ken Museth, Stanley Osher, Guillermo Sapiro, Ross Whitaker August 2004 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04

Publisher: ACM Press

Full text available: pdf(17.07 MB) Additional Information: full citation, abstract, citings

Level set methods, an important class of partial differential equation (PDE) methods, define dynamic surfaces implicitly as the level set (iso-surface) of a sampled, evolving nD function. The course begins with preparatory material that introduces the concept of using partial differential equations to solve problems in computer graphics, geometric modeling and computer vision. This will include the structure and behavior of several different types of differential equations, e.g. the level set eq ...

4 Methods for a priori feasible layout generation: Optical proximity correction (OPC):

friendly maze routing

Li-Da Huang, Martin D. F. Wong

June 2004 Proceedings of the 41st annual conference on Design automation DAC '04

Publisher: ACM Press

Full text available: pdf(541.55 KB)

Additional Information: full citation, abstract, references, citings, index

As the technology migrates into the deep submicron manufacturing(DSM) era, the critical dimension of the circuits is getting smaller than the lithographic wavelength. The unavoidable light diffraction phenomena in the sub-wavelength technologies have become one of the major factors in the yield rate. Optical proximity correction (OPC) is one of the methods adopted to compensate for the light diffraction effect as a post layout process. However, the process is time-consuming and the results are st ...

Keywords: OPC, VLSI, manufacturing, maze routing, micro-lithography, optical system

5 Reflectance and texture of real-world surfaces



Kristin J. Dana, Bram van Ginneken, Shree K. Nayar, Jan J. Koenderink January 1999 ACM Transactions on Graphics (TOG), Volume 18 Issue 1

Publisher: ACM Press

Full text available: pdf(6.94 MB)

Additional Information: full citation, abstract, references, citings, index terms

In this work, we investigate the visual appearance of real-world surfaces and the dependence of appearance on the geometry of imaging conditions. We discuss a new texture representation called the BTF (bidirectional texture function) which captures the variation in texture with illumination and viewing direction. We present a BTF database with image textures from over 60 different samples, each observed with over 200 different combinations of viewing and illumination directions. We describe ...

6 Yield modeling and BEOL fundamentals



José Pineda de Gyvez

March 2001 Proceedings of the 2001 international workshop on System-level interconnect prediction SLIP '01

Publisher: ACM Press

Full text available: pdf(850.38 KB)

Additional Information: full citation, abstract, references, citings, index terms

The advent of deep submicron technologies with larger die sizes lends itself to an increase in fabrication cost. An appropriate yield forecast renders significant benefits in both timeto-market and manufacturing cost prediction. Yield forecasting is essential for the development of new products as it effectively shows if a design is feasible of meeting its cost objectives or not. In mature manufacturing processes, spot defects are the main detractors in the successful outcome of an IC. The ...

7 Subwavelength optical lithography: challenges and impact on physical design



A. B. Kahng, Y. C. Pati

April 1999 Proceedings of the 1999 international symposium on Physical design ISPD

Publisher: ACM Press

	Full text available. Application Additional miormation. In citation, letterates, onlines, index terms
8 (2)	Architectural implications of quantum computing technologies Rodney Van Meter, Mark Oskin January 2006 ACM Journal on Emerging Technologies in Computing Systems (JETC), Volume 2 Issue 1
	Publisher: ACM Press Full text available: pdf(3.24 MB) Additional Information: full citation, abstract, references, index terms
	In this article we present a classification scheme for quantum computing technologies that is based on the characteristics most relevant to computer systems architecture. The engineering trade-offs of execution speed, decoherence of the quantum states, and size of systems are described. Concurrency, storage capacity, and interconnection network topology influence algorithmic efficiency, while quantum error correction and necessary quantum state measurement are the ultimate drivers of logical clo
	Keywords: Quantum computing, quantum computer architecture
9 (BioMEMS: Design tools for BioMEMS Tom Korsmeyer, Jun Zeng, Ken Greiner June 2004 Proceedings of the 41st annual conference on Design automation DAC '04
	Publisher: ACM Press Additional Information: full citation, abstract, references, citings, index
	Full text available: pdf(852.47 KB) Additional miorification, abstract, references, citings, index
	Microsystems used for chemical analyses and biological assays are termed BioMEMS or labs-on-a-chip. These systems often require some of the traditional electromechanical capabilities of MEMS, and in addition require the manipulation of fluids in either continuous flow or droplet form. The distinction between continuous flow and droplets defines two broad categories of BioMEMS. Different applications call for one or the other of these approaches, but in either case, software for design and simulation c
	Keywords : BEM, BioMEMS, CAD, FEM, MEMS, PTAS, lab-on-a-chip, system-level modeling
10 ③	Poster session III: Multilevel full-chip gridless routing considering optical proximity correction Tai-Chen Chen, Yao-Wen Chang January 2005 Proceedings of the 2005 conference on Asia South Pacific design automation ASP-DAC '05
	Publisher: ACM Press Full text available: pdf(374.57 KB) Additional Information: full citation, abstract, references, citings
	To handle modern routing with nanometer effects, we need to consider designs of variable wire widths and spacings, for which gridless routers are desirable due to their great flexibility. The gridless routing is much more difficult than the grid-based one because the solution space of gridless routing is significantly larger than that of grid-based one. In this paper, we present <i>the first</i> multilevel, full-chip gridless <i>detailed</i> router. The router integrates global routing, detailed
11	Semiconductor manufacturing: tool control: An analysis: traditional semiconductor lithography versus emerging technology (nano imprint) Walt Trybula, Robert L. Wright, Kranthi Mitra Adusumilli, Randy K. Goodall

Publisher: Winter Simulation Conference

Full text available: 🔁 pdf(313.28 KB) Additional Information: full citation, abstract, references

The introduction of emerging technologies into existing manufacturing facilities is not necessarily encouraged by the people responsible for the output of the facilities. Any "new" technology carries risks and people responsible for delivering manufactured products are, by nature, risk-adverse. This paper demonstrates the advantage of evaluating the impact of attempting to introduce a new technology into an existing facility before actually attempting the introduction. The first part of the anal ...

12 GPU Cluster for High Performance Computing

Zhe Fan, Feng Qiu, Arie Kaufman, Suzanne Yoakum-Stover

November 2004 Proceedings of the 2004 ACM/IEEE conference on Supercomputing SC

Publisher: IEEE Computer Society

Full text available: 📆 pdf(793.59 KB) Additional Information: full citation, abstract, citings

Inspired by the attractive Flops/dollar ratio and the incredible growth in the speed of modern graphics processing units (GPUs), we propose to use a cluster of GPUs for high performance scientific computing. As an example application, we have developed a parallel flow simulation using the lattice Boltzmann model (LBM) on a GPU cluster and have simulated the dispersion of airborne contaminants in the Times Square area of New York City. Using 30 GPU nodes, our simulation can compute a 480x400x80 L ...

Keywords: GPU cluster, data intensive computing, lattice Boltzmann model, urban airborne dispersion, computational fluid dynamics

13 Transistor Flaring in Deep Submicron-Design Considerations

Vipul Singhal, C. B. Keshav, K. G. Surnanth, P. .. R. Suresh

January 2002 Proceedings of the 2002 conference on Asia South Pacific design automation/VLSI Design ASP-DAC '02

Publisher: IEEE Computer Society

Full text available: pdf(1.00 MB) Additional Information: full citation Publisher Site

Keywords: Design for Manufacturability (DFM), Deep Submicron (DSM), pullback, photolithography, Subwavelength-lithography, Optical Proximity Correction (OPC), SPICEmodels, standard-cell library.

14 Reticle enhancement technology trends: resource and manufacturability implications

for the implementation of physical designs

Warren Grobman, Robert Boone, Cece Philbin, Bob Jarvis

April 2001 Proceedings of the 2001 international symposium on Physical design ISPD '01

Publisher: ACM Press

Full text available: pdf(510.15 KB)

Additional Information: full citation, abstract, references, citings, index terms

In this paper, we briefly describe the lithography developments known as RET (Resolution Enhancement Technologies), which include off-axis illumination in litho tools, Optical and Process Correction (OPC), and phase shifting masks (PSM). All of these techniques are adopted to allow ever smaller features to be reliably manufactured, and are being

generally adopted in all manufacturing below 0.25 microns.	However, their adoption also
places certain restrictions on layouts. We explore these res	***

15 Reticle enhancement technology: implications and challenges for physical design W. Grobman, M. Thompson, R. Wang, C. Yuan, R. Tian, E. Demircan June 2001 Proceedings of the 38th conference on Design automation DAC '01 Publisher: ACM Press Additional Information: full citation, abstract, references, citings, index Full text available: pdf(228.37 KB) terms In this paper, we review phase shift lithography, rule vs. model based methods for OPC and model-based tiling, and discuss their implications for layout and verificat ion. We will discuss novel approaches, using polarizing films on reticles, which change the game for phase-shift coloring, and could lead to a new direction in c:PSM constraints on physical design. We emphasize the need to do tiling that is model-driven and uses optimization techniques to achieve planarity for better manufactu ... Keywords: OPC, PSM, RET, mask data preparation, optical proximity correction, reticle enhancement technology, subwavelength lithography, tiling 16 Subwavelength lithography and its potential impact on design and EDA Andrew B. Kahng, Y. C. Pati June 1999 Proceedings of the 36th ACM/IEEE conference on Design automation DAC '99 Publisher: ACM Press Full text available: pdf(188.93 KB) Additional Information: full citation, references, citings, index terms 17 Layered manufacturing as a graphics display device: Layered manufacturing as a graphics display device Sara McMains, Mike Bailey, Richard Crawford July 2005 ACM SIGGRAPH 2005 Courses SIGGRAPH '05 Publisher: ACM Press Full text available: pdf(7.33 MB) Additional Information: full citation 18 The simulation of integrated tool performance in semiconductor manufacturing John L. Mauer, Roland E. A. Schelasin December 1993 Proceedings of the 25th conference on Winter simulation WSC '93 **Publisher: ACM Press** Full text available: the pdf(387.17 KB) Additional Information: full citation, references, citings 19 The neXT computer T. Dietrich August 1989 ACM SIGSMALL/PC Notes, Volume 15 Issue 3 Publisher: ACM Press Full text available: pdf(1.04 MB) Additional Information: full citation, abstract, references, index terms

What's NeXT? NeXT is Steve Jobs. In September of 1985 Jobs was stripped of his authority at the very company he and his friend Steve Wozniak had created - Apple Computer, Inc. Apple Computer, one of the most successful computer companies ever, is

viewed by many as *the* company that got the personal computer industry rolling. In fact, Apple's first computer, the Apple 1, was introduced in 1976' - almost six years before IBM introduced its infamous PC.

20 Impact of RET on physical layouts

Franklin M. Schellenberg, Luigi Capodieci

April 2001 Proceedings of the 2001 international symposium on Physical design ISPD '01

Publisher: ACM Press

Full text available: pdf(238.06 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we briefly describe the lithography developments known as RET (Resolution Enhancement Technologies), which include off-axis illumination in litho tools, Optical and Process Correction (OPC), and phase shifting masks (PSM). All of these techniques are adopted to allow ever smaller features to be reliably manufactured, and are being generally adopted in all manufacturing below 0.25 microns. However, their adoption also places certain restrictions on layouts. We explore these re ...

Keywords: DFM, OPC, PSM, RET, lithography, off-axis illumination, phase-shifting, physical verification, simulation

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21 Applications: LaserSPECks:: laser SPECtroscopic trace-gas sensor networks -

sensor integration and applications

Stephen So, Farinaz Koushanfar, Anatoliy Kosterev, Frank Tittel

April 2007 Proceedings of the 6th international conference on Information processing in sensor networks IPSN '07

Publisher: ACM Press

Full text available: Tpdf(437.15 KB) Additional Information: full citation, abstract, references, index terms

We introduce a novel laser spectroscopic trace-gas sensor platform, LaserSPECks that integrates recently developed miniature quartz-enhanced photoacoustic spectroscopy (QE-PAS) gas sensing technology. This universal platform uses infrared laser spectroscopy detect and quantify numerous gas species at part-per-million to part-per-billion (ppmppb) concentrations [2]. Traditional gas sensing devices capable of the same sensitivity and specificity are several orders of magnitude larger in size, ...

Keywords: lasers, sensors, spectroscopy, trace gas sensing

22 <u>Design technology productivity in the DSM era (invited talk)</u>

Andrew B. Kahng

January 2001 Proceedings of the 2001 conference on Asia South Pacific design automation ASP-DAC '01

Publisher: ACM Press

Full text available: pdf(126.72 KB)

Additional Information: full citation, abstract, references, citings, index

Future requirements for design technology are always uncertain due to changes in process technology, system implementation platforms, and applications markets. To correctly identify the design technology need, and to deliver this technology at the right time, the design technology community - commercial vendors, captive CAD organizations, and academic researchers - must focus on improving design technology time-to-market and quality-of-result. Put another way, we must address the well-known ...

23 Layout design methodolgies for sub-wavelength manufacturing

Michael L. Rieger, Jeffrey P. Mayhew, Sridhar Panchapakesan

June 2001 Proceedings of the 38th conference on Design automation DAC '01

Publisher: ACM Press

Full text available:

Additional Information: full citation, abstract, references, citings, index

元 pdf(705.30 KB)

terms

In this paper, we describe new types of layout design constraints needed to effectively leverage advanced optical wafter lithography techniques. Most of these constraints are dictated by the physics of advanced lithography processes, while other constraints are imposed by new photomask techniques. Among the methods discussed are 1) phase shift mask (PSM) lithography in which phase information is placed to the photomask in combination with conventional clear and dar information; 2) optical p ...

Keywords: OPC, PSM, lithography, optical proximity correction, phase shift mask

24 Adoption of OPC and the impact on design and layout

F. M. Schellenberg, Olivier Toublan, Luigi Capodieci, Bob Socha

June 2001 Proceedings of the 38th conference on Design automation DAC '01

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(574.58 KB) terms

With the adoption of various combinations of resolution enhancement techniques (RET) for IC lithography, different process constraints are placed on the IC layout. The final layout used for mask production is dramatically different than the original designer's intent. To insure that EDA tools developed for applying RET techniques can have optimal performance, layout methodology must change to create a ture "target" layer that represents the actual design intent. Verification of ...

Keywords: OAI, OPC, PSM, Quasar, RET, SRAF, lithography, off-axis illumination, phaseshifting, quadrupole, scattering bars

25 Embedded hardware design case studies: Design techniques for sensor appliances:

foundations and light compass case study Jennifer L. Wong, Seapahn Megerian, Miodrag Potkonjak

June 2003 Proceedings of the 40th conference on Design automation DAC '03

Publisher: ACM Press

Full text available: 📆 pdf(454.79 KB) Additional Information: full citation, abstract, references, index terms

We propose the first systematic, sensor-centric approach for quantitative design of sensor network appliances. We demonstrate its use by designing light appliance devices and the associated middleware. We have developed five models which are required to make this problem tractable and to undertake the challenging task of designing light sensor appliances: (i) physical world, (ii) light sensor, (iii) physical phenomenon, (iv) appliance design, and (v) computational model. With these models in pla ...

Keywords: sensor appliances, sensor networks

26 Analysis of actual fault mechanisms in CMOS logic gates

Glenn R. Case

June 1976 Proceedings of the 13th conference on Design automation DAC '76

Publisher: ACM Press

Additional Information: full citation, abstract, references, citings, index Full text available: pdf(493.98 KB) terms

An analysis of failure modes in CMOS logic gates is presented. An example 3-input NAND gate is analyzed in detail and the ramifications of its failure modes are discussed.

27 ②	Poster session II: CMP aware shuttle mask floorplanning Gang Xu, Ruiqi Tian, David Z. Pan, Martin D. F. Wong January 2005 Proceedings of the 2005 conference on Asia South Pacific design automation ASP-DAC '05 Publisher: ACM Press Full text available: pdf(354.46 KB) Additional Information: full citation, abstract, references	
	By putting different chips on the same mask, shuttle mask (or multiple project wafer) provides an economical solution for low volume designs and design prototypes to share the rising mask cost. A challenging floorplanning problem is to optimally pack these chips according to objectives and constraints related to cost and manufacturability. In this paper, we study the problem of CMP aware shuttle mask floorplanning, which is formulated as a rectangle packing problem with objectives of area and po	
28	Electron beam lithography Faik S. Ozdemir June 1979 Proceedings of the 16th Conference on Design automation DAC '79 Publisher: IEEE Press Full text available: pdf(990.53 KB) Additional Information: full citation, abstract, index terms	
	Electron beam lithography is a rapidly maturing technology that has opened the realm of submicron design to the semiconductor device and circuit designer. This improved pattern resolution has already yielded devices and circuits exhibiting higher density, higher operating frequency, and lower operating power than has been possible with other lithography methods. This paper discusses electron beam lithography and the devices and circuits that have been fabricated with this technology.	
29	Simulation-based scheduling: simulation-based scheduling I: Pareto control in multi- objective dynamic scheduling of a stepper machine in semiconductor wafer fabrication Amit Kumar Gupta, Appa Iyer Sivakumar December 2006 Proceedings of the 37th conference on Winter simulation WSC '06 Publisher: Winter Simulation Conference Full text available: pdf(218.98 KB) Additional Information: full citation, abstract, references	
	This paper focuses on Pareto control in multi-objective dynamic scheduling of a stepper machine that is considered as a bottleneck machine in the semiconductor wafer fabrication process. We propose the use of compromise programming method for achieving Pareto control in the needs of conflicting objectives such as mean cycle time, cycle time variance and maximum tardiness. Using conjunctive simulated scheduling, at each decision instance in simulated time, a Pareto job is selected and loaded on t	
30	Data collection and evaluation II: Text on tap: the ACL/DCI Mark Liberman October 1989 Proceedings of the workshop on Speech and Natural Language HLT '89 Publisher: Association for Computational Linguistics Full text available: pdf(994.31 KB) Additional Information: full citation, abstract, citings There has been a recent upsurge of interest in computational studies of large bodies of text. The aim of such studies varies widely, from lexicography and studies of language change to automatic indexing methods and statistical models for improving the performance of speech recognition systems and optical character readers. In general, corpus-based studies are critical for the development of adequate models of linguistic structure and for insights into the nature of language use. However, resear	
31	Fabricating arrays of strings	

J. Richard Bradley, Steven S. Skiena

January 1997 Proceedings of the first annual international conference on Computational molecular biology RECOMB '97

Publisher: ACM Press

Full text available: pdf(1.28 MB)

Additional Information: full citation, references, citings, index terms

32 Session 7: Lithography and Routing: What's Next? (invited): Research directions for

coevolution of rules and routers Andrew B. Kahng

April 2003 Proceedings of the 2003 international symposium on Physical design ISPD. '03

Publisher: ACM Press

Full text available: pdf(82.48 KB)

Additional Information: full citation, abstract, references, citings, index

Design rules in advanced IC manufacturing processes are increasingly problematic for modern router architectures and algorithms. This paper first reviews types and causes of "difficult" design rules, as well as implications for current routing approaches. Next, some basic router components are assessed with respect to future viability. Last, the paper discusses prospects for future "coevolution" of design rules and detailed routing methods.

33 Surface modification tools in a virtual environment interface to a scanning probe



microscope

Mark Finch, Vernon L. Chi, Russell M. Taylor, Mike Falvo, Sean Washburn, Richard Superfine April 1995 Proceedings of the 1995 symposium on Interactive 3D graphics SI3D '95

Publisher: ACM Press

Full text available: T pdf(3.87 MB)

Additional Information: full citation, abstract, references, citings, index terms

The NanoManipulator system has been expanded from a virtual-reality interface for a specific scanning tunneling microscope to include control of atomic force microscopes. The current state of the system is reviewed, and new tools extending the user's feel and control in manipulation and fabrication in the mesoscopic regime are detailed. Manipulations that could not be performed using the techniques available from commercial SPM systems are demonstrated, and the direction of ongoing research ...

Keywords: atomic force microscopy, force, haptic, interactive graphics, scanning tunneling microscopy, scientific visualization, teleoperation, telepresence, virtual worlds

34 Focusing on user-to-product relationships: GMS: preserving multiple expert voices in



scientific knowledge management

Adria H. Liszka, William A. Stubblefield, Stephen D. Kleban

June 2003 Proceedings of the 2003 conference on Designing for user experiences **DUX '03**

Publisher: ACM Press

Full text available: pdf(401.55 KB) Additional Information: full citation, abstract, references

Computer archives of scientific and engineering knowledge must insure the accuracy, completeness, and validity of their contents. Unfortunately, designers of these sites often overlook the social and cognitive context of scientific activity in favor of highly distilled collections of theoretical findings and technical data, divorcing scientific information from its human origins. Contextual aspects of knowledge seldom find their way into journals and other scientific forums, yet they often reveal ...

Keywords: cognitive psychology, ethnography, expert communities, information architecture, interaction design, knowledge design, scientific knowledge management, user interface design

35 Optics: lighting the way to EDA riches?: A fast optical propagation technique for

modeling micro-optical systems

Kurzweg P. Kurzweg, Steven P. Levitan, Jose A. Martinez, Kahrs Kahrs, Donald M. Chiarulli June 2002 Proceedings of the 39th conference on Design automation DAC '02

Publisher: ACM Press

Full text available: 📆 pdf(245.71 KB) Additional Information: full citation, abstract, references, index terms

As designers become more aggressive in introducing optical components to microsystems, rigorous optical models are required for system-level simulation tools. Common optical modeling techniques and approximations are not valid for most optical microsystems, and those techniques that provide accurate simulation are computationally slow. In this paper, we introduce an angular frequency optical propagation technique that greatly reduces computation time while achieving the accuracy of a full scal ...

Keywords: CAD, angular spectrum, optical MEMS, optical micro-systems, optical propagation

36 Interconnect technology evaluation: Modeling of the performance of carbon nanotube



bundle, cu/low-k and optical on-chip global interconnects

Hoyeol Cho, Kyung-Hoae Koo, Pawan Kapur, Krishna C. Saraswat March 2007 Proceedings of the 2007 international workshop on System level interconnect prediction SLIP '07

Publisher: ACM Press

Full text available: 🔁 pdf(468.31 KB) Additional Information: full citation, abstract, references, index terms

In this work, we have quantified and compared the performance of carbon nanotube (CNT) and optical interconnects with the existing technology of Cu/low-K interconnects for future high-performance ICs. We present these comparisons not only in terms of commonly used metrics such as latency and power dissipation, but also compare them using important compound performance metrics, such as, bandwidth density per latency per power. We find that the optical interconnect has the lowest latency for gl ...

Keywords: Cu, Global interconnects, bandwidth density, carbon nanotube, latency, optics, power

37 Dimensioning optical networks under traffic growth models

Tapan Kumar Nayak, Kumar N. Sivarajan

December 2003 IEEE/ACM Transactions on Networking (TON), Volume 11 Issue 6

Publisher: IEEE Press

Full text available: pdf(899.24 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we consider the problem of dimensioning a large optical wavelengthdivision multiplexing (WDM) network assuming the traffic is growing over time. Traffic between pairs of nodes is carried through lightpaths which are high-bandwidth end-to-end circuits, occupying a wavelength on each link of the path between two nodes. We are interested in dimensioning the WDM links so that the first lightpath request rejection will occur, with high probability, after a specified period of time ...

Keywords: capacity allocation, capacity exhaustion probability, stochastic modeling, traffic growth model

38 ②	Concepts of computer-based modeling for consultation in optics and refraction C. A. Kulikowski, A. Safir	
•	October 1976 Proceedings of the annual conference ACM 76 Publisher: ACM Press	
	Full text available: pdf(551.43 KB) Additional Information: full citation, abstract, references, index terms	
	In this paper we discuss general principles of computer science applied to problems of medical consultation. We describe some of the design considerations for a computer-based consultation program in optics and refraction. Since the visual system is the input pathway for most of the data entering the central nervous system, the process of refraction serves important purposes beyond the generation of a prescription for a pair of eyeglasses. Refraction, the measurement and correction of optic	
39		
•	became 1992 Proceedings of the 24th conference on White Simulation 1990 92	
	Publisher: ACM Press Full text available: pdf(351.05 KB) Additional Information: full citation, references, index terms	
40	High-level model of a WDMA passive optical bus for a reconfigurable multiprocessor system V. E. Boros, A. D. Rakić, S. Parameswaran June 2000 Proceedings of the 37th conference on Design automation DAC '00 Publisher: ACM Press Full text available: pdf(135.05 KB) Additional Information: full citation, abstract, references, index terms	
	We describe the first iteration of a comprehensive model with which we can investigate the practical limits on optical bus bandwidth and number of bus processing modules for given signal power. The selection algorithm will ultimately allow programmable evaluation of system parameters bus bandwidth, optical power budget, electrical power budget, number of modules and space consumption for an optimal design that is suited to on-the-fly system reconfiguration.	
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Relevance scale

41 Optical realizations of neural network models

Demetri Psaltis

November 1986 Proceedings of 1986 ACM Fall joint computer conference ACM '86

Publisher: IEEE Computer Society Press

Full text available: Ddf(561.37 KB) Additional Information: full citation, references, index terms

42 A volume density optical model

③

Peter L. Williams, Nelson Max

December 1992 Proceedings of the 1992 workshop on Volume visualization VVS '92

Publisher: ACM Press

Full text available: pdf(807.78 KB) Additional Information: full citation, references, citings, index terms

43 Authentication: Pass-thoughts: authenticating with our minds

③

Julie Thorpe, P. C. van Oorschot, Anil Somayaji

September 2005 Proceedings of the 2005 workshop on New security paradigms NSPW

Publisher: ACM Press

Full text available: pdf(3.94 MB)

Additional Information: full citation, abstract, references

We present a novel idea for user authentication that we call pass-thoughts. Recent advances in Brain-Computer Interface (BCI) technology indicate that there is potential for a new type of human-computer interaction: a user transmitting thoughts directly to a computer. The goal of a pass-thought system would be to extract as much entropy as possible from a user's brain signals upon "transmitting" a thought. Provided that these brain signals can be recorded and processed in an accurate and ...

Keywords: authentication, passwords

44 Application of automated design migration to alternating phase shift mask design

Fook-Luen Heng, Lars Liebmann, Jennifer Lund

April 2001 Proceedings of the 2001 international symposium on Physical design ISPD '01

Publisher: ACM Press

Full text available: Double: Double: Double: Additional Information: full citation, abstract, references, citings, index

The use of phase shifted mask (PSM) has been demonstrated to be a powerful resolution enhancement technique (RET) for the printing of features at dimensions below the exposure wavelength in deep submicron technologies. Its implementation in physical design has introduced non-conventional design ground rules, which impact the traditional layout migration process and designers productivity. In this panel discussion paper, we propose a solution to extend the traditional constraint-based layout ...

Keywords: design migration, phase-shifting mask, resolution enchancement technique

45 Scientific visualization and data modeling of scattered sediment contaminant data in

New York/New Jersev estuaries

Hong Ma, Keith W. Jones, Eric A. Stern October 1998 Proceedings of the conference on Visualization '98 VIS '98

Publisher: IEEE Computer Society Press

Full text available: pdf(769.11 KB)

Additional Information: full citation, references, index terms

Keywords: scattered data modeling, spectral domain decompositon method

46 Computation hierarchy for in-network processing

Vlasios Tsiatsis, Ram Kumar, Mani B. Srivastava

Publisher Site

August 2005 Mobile Networks and Applications, Volume 10 Issue 4

Publisher: Kluwer Academic Publishers

Additional Information: full citation, abstract, references, index terms Full text available: pdf(1.07 MB)

In this paper we explore the network level architecture of distributed sensor systems that perform in-network processing. We propose a system with heterogeneous nodes that organizes into a hierarchical structure dictated by the computational capabilities. The presence of high-performance nodes amongst a sea of resource-constrained nodes exposes new tradeoffs for the efficient implementation of network-wide applications. Our experiments show that even for a low relative density of resource-constr ...

Keywords: energy-latency-accuracy tradeoffs, heterogeneity, hierarchy, in-network processing, system-level task mapping

47 Queries and aggregation: Computation hierarchy for in-network processing

Ram Kumar, Vlasios Tsiatsis, Mani B. Srivastava

September 2003 Proceedings of the 2nd ACM international conference on Wireless sensor networks and applications WSNA '03

Publisher: ACM Press

Full text available: Additional Information: full citation, abstract, references, citings, index terms

In this paper, we explore the network level architecture of distributed sensor systems that perform in-network processing. We propose a system with heterogeneous nodes that organizes into a hierarchal structure dictated by the computational capabilities. The presence of high-performance nodes amongst a sea of resource constrained nodes exposes new tradeoffs in the efficient implementation of network-wide applications. The introduction of hierarchy enables partitioning of the application into sub ...

	Keywords : computation offloading, hierarchical architecture, in-network processing	
48 ②	From Electron Mobility to Logical Structure: A View of Integrated Circuits Wesley A. Clark September 1980 ACM Computing Surveys (CSUR), Volume 12 Issue 3 Publisher: ACM Press Full text available: pdf(3.29 MB) Additional Information: full citation, references, citings, index terms	
49	challenges for 45nm and beyond	
	J. W. McPherson July 2006 Proceedings of the 43rd annual conference on Design automation DAC '06 Publisher: ACM Press Full text available: pdf(2.21 MB) Additional Information: full citation, abstract, references, index terms Scaling, for enhanced performance and cost reduction, has pushed existing CMOS materials much closer to their intrinsic reliability limits. This will require that designers will have to be very careful with: high current densities, voltage overshoots, localized hot spots on the chip, high duty-cycle applications, and high thermal-resistance packaging. In addition to the reliability issues, interconnect RC time-delay will worsen with scaling because Cu resistivity is expected to increase due to surf Keywords: CMOS, design, materials, reliability, scaling	
50	Nicolo Manaresi, Gianni Medoro, Melanie Abonnenc, Vincent Auger, Paul Vulto, Aldo Romani, Luigi Altomare, Marco Tartagni, Roberto Guerrieri March 2005 Proceedings of the conference on Design, Automation and Test in Europe - Volume 2 DATE '05 Publisher: IEEE Computer Society Full text available: Dodf(156.99 KB) Additional Information: full citation, abstract, index terms	
	Application of Microelectronic to bioanalysis is an emerging field which holds great promise. From the standpoint of electronic and system design, biochips imply a radical change of perspective, since new, completely different constraints emerge while other usual constraints can be relaxed. While electronic parts of the system can rely on the usual established design-flow, fluidic and packaging design, calls for a new approach which relies significantly on experiments. We hereby make some genera	
51 ③	Claded A. Constant and C. Constant	

52	Design and Behavioral Modeling Tools for Optical Network-on-Chip M. Brière, L. Carrel, T. Michalke, F. Mieyeville, I. O'Connor, F. Gaffiot February 2004 Proceedings of the conference on Design, automation and test in Europe - Volume 1 DATE '04 Publisher: IEEE Computer Society Full text available: pdf(81.88 KB) Additional Information: full citation, abstract, index terms	
	In this paper, we present a tool to analyse photonic devices that can be used to realize basic building blocks of an optical network-on-chip (ONoC). Co-design between electrical tools and optical tools is possible. The VHDL-AMS language has been used to implement behavioral models of photonic devices. For low-level simulation, a gateway between an optical simulator, based on the finite elements method, and a typical EDA layout editor has been realized.	
53	Motion capture, editing & planning: Mapping optical motion capture data to skeletal motion using a physical model Victor Brian Zordan, Nicholas C. Van Der Horst July 2003 Proceedings of the 2003 ACM SIGGRAPH/Eurographics symposium on Computer animation SCA '03 Publisher: Eurographics Association	
	Full text available: pdf(5.39 MB) Additional Information: full citation, abstract, references, citings, index terms Motion capture has become a premiere technique for animation of humanlike characters. To facilitate its use, researchers have focused on the manipulation of data for retargeting, editing, combining, and reusing motion capture libraries. In many of these efforts joint angle plus root trajectories are used as input, although this format requires an inherent mapping from the raw data recorded by many popular motion capture set-ups. In this paper, we propose a novel solution to this mapping problem	
54 ②	New graph bipartizations for double-exposure, bright field alternating phase-shift mask layout	
	Andrew B. Kahng, Shailesh Vaya, Alexander Zelikovsky January 2001 Proceedings of the 2001 conference on Asia South Pacific design automation ASP-DAC '01 Publisher: ACM Press Full text available: pdf(137.08 KB) We describe new graph bipartization algorithms for lay-out modification and phase assignment of bright-field alternating phase-shifting masks (AltPSM) [25]. The problem of layout modification for phase-assignability reduces to the problem of making a certain layout-derived graph bipartite (i.e., 2-colorable). Previous work [3] solves bipartization optimally for the dark field alternating PSMregime. Only one degree of freedom is allowed (and relevant) for such a bipartization: edge deletion,	
55 ②	General storage protection techniques: Ensuring data integrity in storage: techniques and applications Gopalan Sivathanu, Charles P. Wright, Erez Zadok November 2005 Proceedings of the 2005 ACM workshop on Storage security and survivability StorageSS '05 Publisher: ACM Press Full text available: pdf(217.83 KB) Additional Information: full citation, abstract, references, index terms	
	Data integrity is a fundamental aspect of storage security and reliability. With the advent	

storage, interesting challenges arise in ensuring data integrity. In this paper, we discuss the causes of integrity violations in storage and present a survey of integrity assurance techniques that exist today. We describe several interesting applications of storage integrity checking, apart from security, and discuss the im ...

Keywords: file systems, intrusion detection, storage integrity

56	Applied optical illusions: a simulation model of eye response helps improve visual]
©	scene simulation	_
•	W. Marvin Bunker January 1978 ACM SIGSIM Simulation Digest, Volume 9 Issue 2-4	
	Publisher: ACM Press	
	Full text available: pdf(1.71 MB) Additional Information: full citation, abstract, references	
	Modifications made to improve results in computer generated images (CGI) for visual scene simulation provided results better than anticipated. Understanding is essential to effective use of any technique. In this investigation, the response characteristics of the eye were simulated with a computer model. The tonal patterns resulting from CGI processing were applied as the stimulus, and the subjective eye response was obtained. This explained the experimental results and provided guidance for app	
57	A photon accurate model of the human eye]
•	Michael F. Deering	_
~	July 2005 ACM Transactions on Graphics (TOG), ACM SIGGRAPH 2005 Papers	
	SIGGRAPH '05, Volume 24 Issue 3 Publisher: ACM Press	
	Full text available: pdf(1.09 MB) Additional Information: full citation, abstract, references, index terms mov(27:4 MIN)	
	A photon accurate model of individual cones in the human eye perceiving images on digital display devices is presented. Playback of streams of pixel video data is modeled as individual photon emission events from within the physical substructure of each display pixel. The thus generated electromagnetic wavefronts are refracted through a four surface model of the human cornea and lens, and diffracted at the pupil. The position, size, shape, and orientation of each of the five million photorecepto	
	Keywords : display devices, eye models, human eye cone models, schematic eyes, synthesized retina	
		_
58	The computation of optical flow	┛
	S. S. Beauchemin, J. L. Barron September 1995 ACM Computing Surveys (CSUR), Volume 27 Issue 3	
	Publisher: ACM Press	
	Full text available: pdf(3.06 MB) Additional Information: full citation, abstract, references, citings, index terms	
	Two-dimensional image motion is the projection of the three-dimensional motion of objects, relative to a visual sensor, onto its image plane. Sequences of time-orderedimages allow the estimation of projected two-dimensional image motion as either instantaneous image velocities or discrete image displacements. These are usually called the optical flow field or the image velocity field. Provided that optical flow is a reliable approximation to two-dimensional	
59		
	Ontimal placement of high probability randomly retrieved blocks on CLV ontical discs	



Daniel Alexander Ford, Stavros Christodoulakis

January 1991 ACM Transactions on Information Systems (TOIS), Volume 9 Issue 1

Publisher: ACM Press

Full text available: pdf(1.64 MB)

Additional Information: full citation, abstract, references, citings, index terms, review

Optimal data placement on a CLV (Constant Linear Velocity) format optical discs has an objective the minimization of the expected access cost of data retrievals from the disc when the probabilities of access of data items may be different. The problem of optimal data placement for optical discs is both important and more difficult than the corresponding problem on magnetic discs. A good data placement on optical discs is more important because data sets on optical discs such as WORM and CD ...

Keywords: management, performance

60 A general approach for all-to-all routing in multihop WDM optical networks Weifa Liang, Xiaojun Shen

August 2006 IEEE/ACM Transactions on Networking (TON), Volume 14 Issue 4

Publisher: IEEE Press

Full text available: pdf(422.05 KB) Additional Information: full citation, abstract, references, index terms

WDM optical networks provide unprecedented high speed and reliability for message transfer among the nodes. All-to-all routing is a fundamental routing problem in such networks and has been well studied on single hop WDM networks. However, the number of wavelengths to realize all-to-all routing on the single hop model typically is very large. One way to reduce the number of wavelengths is to use k-hop routing, in which each routing path consists of k segments and each segment is as ...

Keywords: WDM routing, all-to-all routing, gossiping, multihop routing algorithms, network design, optical networks, robust routing protocol

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Dynamic data driven application simulation: sensor/simulation fusion: DDDAS

approaches to wildland fire modeling and contaminant tracking

Craig C. Douglas, Robert A. Lodder, Richard E. Ewing, Yalchin Efendiev, Guan Qin, Janice Coen, Mauricio Kritz, Jonathan D. Beezley, Jan Mandel, Mohamed Iskandarani, Anthony Vodacek, Gundolf Haase

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December 2006 Proceedings of the 37th conference on Winter simulation WSC '06

Publisher: Winter Simulation Conference

Full text available: pdf(203.65 KB) Additional Information: full citation, abstract, references

We report on two ongoing efforts to build Dynamic Data Driven Application Systems (DDDAS) for (1) short-range forecasting of weather and wildfire behavior from real time weather data, images, and sensor streams, and (2) contaminant identification and tracking in water bodies. Both systems change their forecasts as new data is received. We use one long term running simulation that self corrects using out of order, imperfect sensor data. The DDDAS versions replace codes that were previously run us ...

² Facial modeling and animation

Jörg Haber, Demetri Terzopoulos

August 2004 ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04

Publisher: ACM Press

Full text available: pdf(18.15 MB) Additional Information: full citation, abstract

In this course we present an overview of the concepts and current techniques in facial modeling and animation. We introduce this research area by its history and applications. As a necessary prerequisite for facial modeling, data acquisition is discussed in detail. We describe basic concepts of facial animation and present different approaches including parametric models, performance-, physics-, and learning-based methods. State-of-the-art techniques such as muscle-based facial animation, mass-s ...

3 Reflectance and texture of real-world surfaces

Kristin J. Dana, Bram van Ginneken, Shree K. Nayar, Jan J. Koenderink January 1999 ACM Transactions on Graphics (TOG), Volume 18 Issue 1

Publisher: ACM Press

Full text available: pdf(6.94 MB)

Additional Information: full citation, abstract, references, citings, index terms

In this work, we investigate the visual appearance of real-world surfaces and the dependence of appearance on the geometry of imaging conditions. We discuss a new texture representation called the BTF (bidirectional texture function) which captures the variation in texture with illumination and viewing direction. We present a BTF database with image textures from over 60 different samples, each observed with over 200 different combinations of viewing and illumination directions. We describe ...

4 BioMEMS: Design tools for BioMEMS

Tom Korsmeyer, Jun Zeng, Ken Greiner

June 2004 Proceedings of the 41st annual conference on Design automation DAC '04

Publisher: ACM Press

Full text available: pdf(852.47 KB)

Additional Information: <u>full citation</u>, <u>abstract</u>, <u>references</u>, <u>citings</u>, <u>index</u> terms

Microsystems used for chemical analyses and biological assays are termed BioMEMS or labs-on-a-chip. These systems often require some of the traditional electromechanical capabilities of MEMS, and in addition require the manipulation of fluids in either continuous flow or droplet form. The distinction between continuous flow and droplets defines two broad categories of BioMEMS. Different applications call for one or the other of these approaches, but in either case, software for design and simulation c ...

Keywords: BEM, BioMEMS, CAD, FEM, MEMS, PTAS, lab-on-a-chip, system-level modeling

5 GPU Cluster for High Performance Computing

Zhe Fan, Feng Qiu, Arie Kaufman, Suzanne Yoakum-Stover

November 2004 Proceedings of the 2004 ACM/IEEE conference on Supercomputing SC '04

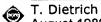
Publisher: IEEE Computer Society

Full text available: pdf(793.59 KB) Additional Information: full citation, abstract, citings

Inspired by the attractive Flops/dollar ratio and the incredible growth in the speed of modern graphics processing units (GPUs), we propose to use a cluster of GPUs for high performance scientific computing. As an example application, we have developed a parallel flow simulation using the lattice Boltzmann model (LBM) on a GPU cluster and have simulated the dispersion of airborne contaminants in the Times Square area of New York City. Using 30 GPU nodes, our simulation can compute a 480x400x80 L ...

Keywords: GPU cluster, data intensive computing, lattice Boltzmann model, urban airborne dispersion, computational fluid dynamics

6 The neXT computer



August 1989 ACM SIGSMALL/PC Notes, Volume 15 Issue 3

Publisher: ACM Press

Full text available: pdf(1.04 MB)

Additional Information: full citation, abstract, references, index terms

What's NeXT? NeXT is Steve Jobs. In September of 1985 Jobs was stripped of his authority at the very company he and his friend Steve Wozniak had created - Apple Computer, Inc. Apple Computer, one of the most successful computer companies ever, is viewed by many as the company that got the personal computer industry rolling. In fact, Apple's first computer, the Apple 1, was introduced in 1976' - almost six years before IBM introduced its infamous PC.

7
<u>Applications: LaserSPECks:: laser SPECtroscopic trace-gas sensor networks - sensor integration and applications</u>



Stephen So, Farinaz Koushanfar, Anatoliy Kosterev, Frank Tittel April 2007 Proceedings of the 6th international conference on Information processing in sensor networks IPSN '07

Publisher: ACM Press

Full text available: pdf(437.15 KB) Additional Information: full citation, abstract, references, index terms

We introduce a novel laser spectroscopic trace-gas sensor platform, LaserSPECks that integrates recently developed miniature quartz-enhanced photoacoustic spectroscopy (QE-PAS) gas sensing technology. This universal platform uses infrared laser spectroscopy detect and quantify numerous gas species at part-per-million to part-per-billion (ppmppb) concentrations [2]. Traditional gas sensing devices capable of the same sensitivity and specificity are several orders of magnitude larger in size, ...

Keywords: lasers, sensors, spectroscopy, trace gas sensing

8 Embedded hardware design case studies: Design techniques for sensor appliances:

foundations and light compass case study

Jennifer L. Wong, Seapahn Megerian, Miodrag Potkonjak

June 2003 Proceedings of the 40th conference on Design automation DAC '03

Publisher: ACM Press

Full text available: pdf(454.79 KB) Additional Information: full citation, abstract, references, index terms

We propose the first systematic, sensor-centric approach for quantitative design of sensor network appliances. We demonstrate its use by designing light appliance devices and the associated middleware. We have developed five models which are required to make this problem tractable and to undertake the challenging task of designing light sensor appliances: (i) physical world, (ii) light sensor, (iii) physical phenomenon, (iv) appliance design, and (v) computational model. With these models in pla ...

Keywords: sensor appliances, sensor networks

Data collection and evaluation II: Text on tap: the ACL/DCI

Mark Liberman

October 1989 Proceedings of the workshop on Speech and Natural Language HLT '89

Publisher: Association for Computational Linguistics

Full text available: pdf(994.31 KB) Additional Information: full citation, abstract, citings

There has been a recent upsurge of interest in computational studies of large bodies of text. The aim of such studies varies widely, from lexicography and studies of language change to automatic indexing methods and statistical models for improving the performance of speech recognition systems and optical character readers. In general, corpus-based studies are critical for the development of adequate models of linguistic structure and for insights into the nature of language use. However, resear ...

10 Surface modification tools in a virtual environment interface to a scanning probe



Mark Finch, Vernon L. Chi, Russell M. Taylor, Mike Falvo, Sean Washburn, Richard Superfine April 1995 Proceedings of the 1995 symposium on Interactive 3D graphics SI3D '95

Publisher: ACM Press

Full text available: pdf(3.87 MB)

Additional Information: full citation, abstract, references, citings, index terms

The NanoManipulator system has been expanded from a virtual-reality interface for a specific scanning tunneling microscope to include control of atomic force microscopes. The current state of the system is reviewed, and new tools extending the user's feel and

control in manipulation and fabrication in the mesoscopic regime are detailed.

Manipulations that could not be performed using the techniques available from commercial SPM systems are demonstrated, and the direction of ongoing research ...

Keywords: atomic force microscopy, force, haptic, interactive graphics, scanning tunneling microscopy, scientific visualization, teleoperation, telepresence, virtual worlds

Focusing on user-to-product relationships: GMS: preserving multiple expert voices in scientific knowledge management
Adria H. Liszka, William A. Stubblefield, Stephen D. Kleban

June 2003 Proceedings of the 2003 conference on Designing for user experiences

DUX '03
Publisher: ACM Press

Full text available: 🔁 pdf(401.55 KB) Additional Information: full citation, abstract, references

Computer archives of scientific and engineering knowledge must insure the accuracy, completeness, and validity of their contents. Unfortunately, designers of these sites often overlook the social and cognitive context of scientific activity in favor of highly distilled collections of theoretical findings and technical data, divorcing scientific information from its human origins. Contextual aspects of knowledge seldom find their way into journals and other scientific forums, yet they often reveal ...

Keywords: cognitive psychology, ethnography, expert communities, information architecture, interaction design, knowledge design, scientific knowledge management, user interface design

12 Optics: lighting the way to EDA riches?: A fast optical propagation technique for modeling micro-optical systems

Kurzweg P. Kurzweg, Steven P. Levitan, Jose A. Martinez, Kahrs Kahrs, Donald M. Chiarulli June 2002 **Proceedings of the 39th conference on Design automation DAC '02**

Publisher: ACM Press

Full text available: 🔁 pdf(245.71 KB) Additional Information: full citation, abstract, references, index terms

As designers become more aggressive in introducing optical components to microsystems, rigorous optical models are required for system-level simulation tools. Common optical modeling techniques and approximations are not valid for most optical microsystems, and those techniques that provide accurate simulation are computationally slow. In this paper, we introduce an angular frequency optical propagation technique that greatly reduces computation time while achieving the accuracy of a full scal ...

Keywords: CAD, angular spectrum, optical MEMS, optical micro-systems, optical propagation

13 Interconnect technology evaluation: Modeling of the performance of carbon nanotube

bundle, cu/low-k and optical on-chip global interconnects

Hoyeol Cho, Kyung-Hoae Koo, Pawan Kapur, Krishna C. Saraswat

March 2007 Proceedings of the 2007 international workshop on System level interconnect prediction SLIP '07

Publisher: ACM Press

Full text available: pdf(468.31 KB) Additional Information: full citation, abstract, references, index terms

In this work, we have quantified and compared the performance of carbon nanotube (CNT) and optical interconnects with the existing technology of Cu/low-K interconnects for future high-performance ICs. We present these comparisons not only in terms of

commonly used metrics such as latency and power dissipation, but also compare them using important compound performance metrics, such as, bandwidth density per latency per power. We find that the optical interconnect has the lowest latency for gl ...

Keywords: Cu, Global interconnects, bandwidth density, carbon nanotube, latency, optics, power

14 Dimensioning optical networks under traffic growth models

Tapan Kumar Nayak, Kumar N. Sivarajan

December 2003 IEEE/ACM Transactions on Networking (TON), Volume 11 Issue 6

Publisher: IEEE Press

Full text available: pdf(899.24 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we consider the problem of dimensioning a large optical wavelengthdivision multiplexing (WDM) network assuming the traffic is growing over time. Traffic between pairs of nodes is carried through lightpaths which are high-bandwidth end-to-end circuits, occupying a wavelength on each link of the path between two nodes. We are interested in dimensioning the WDM links so that the first lightpath request rejection will occur, with high probability, after a specified period of time ...

Keywords: capacity allocation, capacity exhaustion probability, stochastic modeling, traffic growth model

15 Concepts of computer-based modeling for consultation in optics and refraction



C. A. Kulikowski, A. Safir

October 1976 Proceedings of the annual conference ACM 76

Publisher: ACM Press

Full text available: pdf(551.43 KB) Additional Information: full citation, abstract, references, index terms

In this paper we discuss general principles of computer science applied to problems of medical consultation. We describe some of the design considerations for a computerbased consultation program in optics and refraction. Since the visual system is the input pathway for most of the data entering the central nervous system, the process of refraction serves important purposes beyond the generation of a prescription for a pair of eyeglasses. Refraction, the measurement and correction of optic ...

16 High-level model of a WDMA passive optical bus for a reconfigurable multiprocessor



system system

V. E. Boros, A. D. Rakić, S. Parameswaran

June 2000 Proceedings of the 37th conference on Design automation DAC '00

Publisher: ACM Press

Full text available: pdf(135.05 KB) Additional Information: full citation, abstract, references, index terms

We describe the first iteration of a comprehensive model with which we can investigate the practical limits on optical bus bandwidth and number of bus processing modules for given signal power. The selection algorithm will ultimately allow programmable evaluation of system parameters bus bandwidth, optical power budget, electrical power budget, number of modules and space consumption for an optimal design that is suited to on-thefly system reconfiguration.

17 Optical realizations of neural network models

Demetri Psaltis

November 1986 Proceedings of 1986 ACM Fall joint computer conference ACM '86

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18 A volume density optical model Peter L. Williams, Nelson Max December 1992 Proceedings of the 1992 workshop on Volume visualization VVS '92 **Publisher: ACM Press** Full text available: pdf(807.78 KB) Additional Information: full citation, references, citings, index terms 19 Authentication: Pass-thoughts: authenticating with our minds Julie Thorpe, P. C. van Oorschot, Anil Somayaji September 2005 Proceedings of the 2005 workshop on New security paradigms NSPW Publisher: ACM Press Full text available: pdf(3.94 MB) Additional Information: full citation, abstract, references We present a novel idea for user authentication that we call pass-thoughts. Recent advances in Brain-Computer Interface (BCI) technology indicate that there is potential for a new type of human-computer interaction: a user transmitting thoughts directly to a computer. The goal of a pass-thought system would be to extract as much entropy as possible from a user's brain signals upon "transmitting" a thought. Provided that these brain signals can be recorded and processed in an accurate and ... **Keywords**: authentication, passwords 20 Scientific visualization and data modeling of scattered sediment contaminant data in New York/New Jersey estuaries Hong Ma, Keith W. Jones, Eric A. Stern October 1998 Proceedings of the conference on Visualization '98 VIS '98 Publisher: IEEE Computer Society Press Full text available: pdf(769.11 KB) Additional Information: full citation, references, index terms Keywords: scattered data modeling, spectral domain decompositon method

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